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[STRUCTURED](#)
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[Business Unit](#)
[ACTION](#)
[HELP](#)

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<b>Word Mark</b>	PSOC
<b>Goods and Services</b>	IC 009. US 021 023 026 036 038. G & S: semiconductors devices; microprocessors; and integrated microelectronic devices in the nature of semiconductors devices
<b>Mark Drawing Code</b>	(1) TYPED DRAWING
<b>Serial Number</b>	75951037
<b>Filing Date</b>	March 3, 2000
<b>Filed ITU</b>	FILED AS ITU
<b>Published for Opposition</b>	November 12, 2002
<b>Owner</b>	(APPLICANT) Cypress MicroSystems, Inc. CORPORATION DELAWARE 12230 N. E. Woodinville Drive Suite A Woodinville WASHINGTON 98072
<b>Attorney of Record</b>	John Weber
<b>Type of Mark</b>	TRADEMARK
<b>Register</b>	PRINCIPAL
<b>Live/Dead Indicator</b>	LIVE

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## CYPRESS MICROSYSTEMS UNVEILS PROGRAMMABLE SYSTEM-ON-A-CHIP FOR EMBEDDED INTERNET, COMMUNICATIONS AND CONSUMER SYSTEMS

PS C™ Devices Integrate Programmable Analog and Digital Functions To Simplify Design Of Wireless, Handheld, Data Communications, and Industrial Systems

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**WOODINVILLE, Wash., November 13, 2000** - Cypress MicroSystems, a subsidiary of Cypress Semiconductor, today introduced a family of programmable system-on-a-chip (PSoC™) devices, designed to implement a single, configurable device on MCU-based system boards. As general purpose solutions, PSoC devices are targeted for implementation in embedded applications, including audio, wireless, handheld, data communications, Internet control, industrial, and consumer systems.

PSoC devices integrate a fast microcontroller, SONOS™-based (Silicon Oxide Nitride Oxide Silicon) Flash memory and SRAM, and programmable arrays of analog and digital system functions - known as PSoC blocks - in low-cost, small-footprint packages. To save designers time, Cypress Microsystems also offers User Modules - pre-designed peripherals comprised of PSoC blocks. By selecting a PSoC with the needed resource combination of memory, PSoC blocks and pins, designers have a device that reduces costs by eliminating external chips and simplifying system design.

"Today there are thousands of different 8-bit microcontrollers on the market, and designers still have trouble finding one that is a perfect fit for their application. In addition, embedded applications require analog peripherals that usually call for additional external devices," said Mike Polen, Cypress MicroSystems's vice president of marketing. "Engineers know that the perfect solution is a custom-designed system-on-a-chip, but custom microcontrollers, ASICs and PLDs are expensive, require very large volumes or call for specialized design skills."

"In contrast, the Cypress Microsystems PSoC solution offers custom configurations, takes no time or special expertise to create, incurs no NRE, and integrates both analog and digital functions," continued Polen. "These factors make the cost of the PSoC solution competitive with standard microcontrollers."

SONOS - a proprietary Cypress process technology - is key to Cypress Microsystems's system-on-a-chip. SONOS is a cost-effective, electrically-erasable, programmable, non-volatile memory structure that speeds time-to-market at a cost that is comparable with commodity devices. SONOS is also being implemented in Cypress Semiconductor's frequency timing generators, USB controllers and intelligent control network devices.

### About PSoC blocks and User Modules

After a review of the peripherals found in microcontrollers and the analog ICs used in typical designs, Cypress Microsystems engineers selected a variety of digital and analog peripherals, then created PSoC blocks, or system-on-a-chip blocks, and integrated them into each PSoC device. Users select the functions they need and configure the PSoC blocks on the PSoC device accordingly.

Digital PSoC blocks are 8-bit peripherals that can be programmed to perform a variety of functions by changing the contents of a few registers. They can be configured as timers, controllers, serial communications ports, CRC generators, or pseudo-random number generators. They can be connected in series to handle more complex functions - for example, a 24-bit timer is three connected 8-bit PSoC blocks acting as timers.

Analog PSoC blocks consist of programmable operational amplifier circuits that can be configured to perform a set of typical analog peripheral functions. Analog PSoC blocks can be programmed by setting a few registers to interconnect and trim the appropriate operational amplifier circuit to create the desired result. Among the typical peripherals that can be created are amplifiers, DACs, ADCs, analog drivers, and high-, low- and band-pass filters.

To eliminate the need for customers to understand PSoC blocks in-depth and further shorten development time, Cypress Microsystems developed User Modules, preconfigured peripherals created from PSoC blocks. User Modules allow customers to select the functions they need and automatically integrate the necessary PSoC

blocks into their PSoC device.

### Software Support

Cypress Microsystems will offer PSoC Designer™, a complete development system to support the PSoC device. The system will include a C compiler and assembler, a linking and debugging tool, an in-circuit emulator, and the Device Editor™.

Designers can use the Device Editor and its graphical interface to configure a PSoC device by dragging the desired peripherals or functions - from a library of User Modules - into the part. The selected User Modules are then automatically mapped onto the available PSoC blocks.

On-chip Flash program memory stores each PSoC device's parameters, allowing the user to reprogram the device during production, during system test or in the field. PSoC devices may even be self-reprogrammed remotely.

"PSoC devices are like a screwdriver with replaceable bits," stated Nathan John, Cypress Microsystems's director of marketing. "They can be configured and reconfigured as the design progresses and functional requirements change. They provide a core set of analog and digital functions that eliminate the need for additional devices. And they can be programmed to custom-fit any application."

### Availability and Pricing

Cypress Microsystems will initially offer the following PSoC devices:

Part Number	Max. Speed	Package	Samples	Production	Price (Q 1,000)
CY8C25122	24 MHz	8-pin DIP	Q1 2001	Q1 2001	\$ 1.76
CY8C26233	24 MHz	20-pin DIP 20-pin SOIC 20-pin SSOP	Q1 2001	Q1 2001	\$ 2.21
CY8C26443	24 MHz	28-pin DIP 28-pin SOIC 28-pin SSOP	Q4 2000	Q1 2001	\$ 2.79
CY8C26643	24 MHz	48-pin DIP 48-pin SSOP 48-pin TQFP	Q1 2001	Q1 2001	\$ 3.53

### About Cypress Microsystems

Cypress Microsystems designs, develops, manufactures and markets high-performance, field programmable integrated micro-based solutions for high-volume embedded control functions in computer, communications, consumer and control applications. Established as a subsidiary of Cypress Semiconductor Corporation in the fourth quarter of 1999, Cypress Microsystems's stockholders are its employees and Cypress Semiconductor. The close association with Cypress Semiconductor allows access to their process and design technology, and field sales and applications forces. Cypress Microsystems is based near Seattle in Woodinville, Washington.

The Cypress Microsystems PSoC™ family of programmable system-on-a-chip devices will replace many MCU-based system boards with one single-chip, programmable PSoC. A single PSoC device provides a fast microcontroller, SONOS™ FLASH and SRAM memory, and configurable analog and digital peripheral blocks in a range of convenient pin outs and memory sizes. This new product family will bring the cost and time-to-market advantages of programmable technologies, such as CPLDs and FPGAs, to the emerging system-on-a-chip marketplace.

More information about Cypress Microsystems and its products can be accessed through its Web site at [www.cypressmicro.com](http://www.cypressmicro.com).

*"Safe Harbor" Statement under the Private Securities Litigation Reform Act of 1995: Statements in this press release regarding Cypress Semiconductor's business that are not historical facts are "forward-looking statements" involving risks and uncertainties, including but not limited to: the effect of global economic conditions, shifts in supply and demand, market acceptance, the impact of competitive products and pricing, product development, commercialization and technological difficulties, and capacity and supply constraints. Please refer to Cypress Semiconductor's Securities and Exchange Commission filings for a discussion of such risks.*

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